

### **REMARKS**

Claims 1-5, 7-16, and 19-24 are pending in the application and are at issue.

Claims 1-5, 7, 8, 10, 12, 14, and 22-24 stand rejected as being anticipated by Burgert et al. U.S. Patent No. 5,629,377 ('377). Claims 11, 13, 15, 16, 19, 20, and 21 stand rejected under 35 U.S.C. §103 as being obvious over the '377 patent. Claim 9 is objected to, but allowable if rewritten in independent form. Applicants traverse these rejections.

The present claims recite a *process* for producing an absorbent composite by (a) contacting a solid supporting material with an emulsion comprising at least one *polymeric* material and at least one crosslinker and (b) *curing* the emulsion containing the *polymeric* material *on* the supporting material. The polymeric material is a wholly or partially neutralized carboxyl-rich polymer and is applied to the supporting material in the form of an emulsion containing an organic solvent and water. See specification page 3, lines 17-20 and page 4, lines 32-34.

The emulsion containing the polymeric material, water, and organic solvent is admixed with a crosslinker, and the resulting emulsion is applied to a supporting substrate (specification, page 8, lines 35-36 and page 9, lines 20-27). The emulsion-loaded supporting material then is dried, and during drying, the supporting material and the polymeric material become crosslinked, i.e. cured, within and between each other (specification page 9, lines 29-35).

It is important to particularly note that the emulsion is applied to the solid supporting material *prior* to curing of the polymer and crosslinker present in the emulsion. The polymer and crosslinker then are cured on the substrate such that the supporting material and polymeric material become crosslinked within and between each other. This is in contrast to merely applying a polymer onto a solid substrate wherein crosslinking after application does not occur.

With respect to the anticipation rejection, it is axiomatic that “[A] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of*

*California*, 814 F.2d 628, 631 (Fed. Cir. 1987). A determination that a claim is anticipated under 35 USC §102 involves two analytical steps. First, the Patent Office must interpret the claim language, where necessary, to ascertain its meaning and scope. In interpreting the claim language, the Patent Office is permitted to attribute to the claims only their broadest *reasonable* meaning as understood by persons having ordinary skill in the art, considered in view of the entire disclosure of the specification. *See In re Buszard*, 504 F.3d 1364 (Fed. Cir. 2007) (reversing a Patent Office decision that applied an unreasonably broad interpretation to a claim); *see also, In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). Second, the Patent Office must compare the construed claim to a single prior art reference and set forth factual findings that “each and every limitation is found either expressly or inherently [disclosed] in [that] single prior art reference.” *Celeritas Techs. Ltd. V. Rockwell Int’l Corp.*, 150 F.3d 1354, 1360 (Fed. Cir. 1998). Additionally, “[t]he identical invention must be shown in as complete detail as is contained in the patent claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989).

With further respect to a rejection under 35 U.S.C. §102(b), MPEP §2131 states:

"TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM"

'A claim is anticipated only if each and every elements as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)...'The identical invention must be shown in as complete detail as is contained in the...claim.' *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

The '377 patent discloses the preparation of water-absorbent resin particles. As stated by the examiner, the particles can be prepared *via* a well-known emulsion polymerization process. As required in an emulsion polymerization process, an organic solvent is used. The polymerization is conducted in the presence of the organic solvent, then

the organic solvent is evaporated to provide the resin particles. As stated in the '377 patent, at column 10, lines 11-16:

"When any process employing organic solvent is utilized, it is important that the hydrogel-forming polymer material recovered from such processes be treated to remove substantially all of the excess organic solvent. Preferably, the hydrogel-forming polymers contain no more than about 0.5 percent by weight of residual organic solvent."

Also see column 11, lines 29-30, stating that the "drying time should be sufficient to remove substantially all of the water and optional solvent." The '377 patent therefore is directed to producing dry polymer particles that are essentially free of organic solvents.

The '377 patent goes on to disclose that the "water-absorbent resin particles of this invention can be used in any use wherein absorption and binding of aqueous fluids is desired." The reference clearly teaches that these "uses" are after formation of the polymer and all subsequent steps, e.g., drying, to provide dry polymer particles. One use for the polymer particles is *mixing into* or *attaching* to a structure of absorbent material ('377 patent, column 13, lines 44-50). By stating that the particles can be mixed into an absorbent material, the '377 patent clearly teaches that it is the final, dry polymer particles that are mixed with the absorbent material. The '377 patent contains no teaching or suggestion with respect to how the dry polymer particles are attached to a structure of absorbent material.

Numerous differences exist between the '377 patent and the present claims that preclude an anticipation rejection under 35 U.S.C. §102(b). First, the present claims explicitly recite a process wherein the emulsified mixture of polymer and crosslinking agent (including the solvent) is contacted with the supporting material and is crosslinked (i.e., cured) *within and between* one another. The '377 patent teaches the preparation of polymer particles, in an inverse emulsion process, and *after* the polymer particles are formed and dried, mixing or attaching the polymer particles to a structure of absorbent material.

Second, the present claims recite a solvent in the emulsion mixture, and curing the emulsion on the solid substrate (i.e., in the presence of the organic solvent). The '377 patent discloses an inverse emulsion process, in the presence of an organic solvent.

However, the organic solvent is *removed* during process steps that provide the polymer particles. The polymer particles of the '377 patent, in the absence of an organic solvent, are mixed with or attached to absorbent material.

Third, the '377 patent merely discloses the addition of a crosslinker to a monomer solution *prior* to the polymerization reaction to form the polymer (see '377 patent, column 8, lines 13-20). The '377 patent fails to teach adding a crosslinker to an already formed polymer, as presently recited in the claims.

Fourth, the '377 patent teaches heating of the polymer particles *after* they are prepared and *not* in the presence of a structure of an absorbent material. See '377 patent, column 2, lines 43-45 stating "wherein the resin *particle* has been heated..." In contrast, the present claims recite curing, i.e., crosslinking, the emulsified mixture within and between the solid supporting material using heat.

With respect to crosslinking agents, the examiner states that the '377 patent discloses tripropylene glycol as a crosslinker. This is incorrect. The '377 patent discloses "polyvinyl crosslinkers" (column 5, line 19) and particularly "di- or tri- (meth)acrylic acid esters, of polyols such as...tripropylene glycol" (column 5, lines 24-31).

It must further be noted that the '377 patent fails to provide disclosure with respect to *how* the polymer particles disclosed therein can be "attached" to a structure of absorbent material. It is well-settled that for a reference to anticipate a claim, the reference must contain an enabling disclosure. The '377 patent fails to enable attachment of polymer particles to a structure of absorbent material, and therefore cannot anticipate the present claim 1. See MPEP §2121.01.

In summary, for all the reasons set forth above, differences exist between the present claims and the '377 patent. Therefore, it is submitted that claims 1-5, 7, 8, 10, 12, 14, and 22-24 cannot be anticipated by the '377 patent, and that the rejection under 35 U.S.C. §102(b) should be withdrawn. For the reasons set forth above, and for the additional reasons set forth below, it also is submitted that the differences between the present claims and the

'377 patent are nonobvious differences, and that no pending claim would have been obvious over the '377 patent under 35 U.S.C. §103.

A determination that a claimed invention would have been obvious under §103(a) is a legal conclusion involving four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; (2) the differences between the claimed invention and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Obviousness must be determined as of the time the invention was made and in view of the state of the art that existed at that time. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-51 (Fed. Cir. 1988).

The Patent Office must clearly articulate facts and reasons why the claimed invention "as a whole" would have been obvious to a hypothetical person having ordinary skill in the art at least as of the claimed invention's effective filing date. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741 (2007) (citing with approval *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.")). See also MPEP §2143 ("The key to supporting any rejection under 35 U.S.C. §103 is the clear articulation of reason(s) why the claimed invention would have been obvious.").

To reach a proper determination under 35 U.S.C. §103(a), the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicants' disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search, and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicants' disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the *facts* gleaned from the prior art. MPEP §2142.

Furthermore, to establish a *prima facie* case of obviousness, the examiner must satisfy three requirements. First, the prior art references must teach or suggest all the limitations of the claims. In *re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970). Second, as the U.S. Supreme Court held in *KSR International Co. v. Teleflex Inc. et al.*, 127 S.Ct. 1727 (2007), "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was *an apparent reason* to combine the known elements in the fashion claimed by the patent at issue. ...it can be important to *identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements* in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (emphasis added, *KSR, supra*). Third, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991).

As articulated by the Court of Appeals for the Federal Circuit in *Ortho-McNeil Pharmaceutical Inc. v. Mylan Laboratories Inc.*, 86 USPQ 2d, 1196, 1201-2 (Fed. Cir. 2008):

"As this court has explained, however, a flexible TSM test remains the primary guarantee against a non-statutory hindsight analysis such as occurred in this case. In *re Translogic Tech., Inc.* 504 F.3d 1249, 1257 [84 USPQ 2d 1929] (Fed. Cir. 2007) ("[A]s the Supreme Court suggests, a flexible approach to the TSM test prevents hindsight and focuses on evidence before the time of invention.)."

The Court in *KSR* held that a patent composed of several elements is not proved obvious merely by demonstrating that each of the elements was, independently, known in the prior art (*KSR*, 127 S.Ct. at 1741). The court further emphasized the importance of *identifying a reason* that would have prompted a person of ordinary skill in the

relevant field to combine the elements in the way the claimed new invention does, which the examiner has not provided (*Id.*, emphasis added).

In addition, applicants respectfully note that MPEP §§2142 and 2143 require that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicants' disclosure. *In re Vaeck*, 947 F.2d 4899 (Fed. Cir. 1991). The mere fact that the prior art may be modified in the manner suggested by the examiner does *not* make the modification obvious unless the prior art suggests the desirability of the modification. *In re Gordan*, 733, F.2d at 902, 221 USPQ at 1127. *In re Fritch*, 23 USPQ 2<sup>nd</sup> 1780, 1783-1784 (Fed. Cir. 1992). It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 Fed. 2<sup>nd</sup> 982, 987, 18 USPQ 2<sup>nd</sup> 1885, 1888 (Fed. Cir. 1991). *In re Fritch*, 23 USPQ 2<sup>nd</sup> 1780 at 1784 (Fed. Cir. 1992).

In view of the above, it is submitted that *no* pending claim would have been obvious over the '377 patent. First, the '377 patent fails to teach or suggest every element recited in the claims. The present claims *require* contact between the solid supporting material and the emulsified mixture and curing of the mixture on the supporting material to provide crosslinkers. In contrast, the '377 patent teaches preparation of a solid particle, then mixing or attaching polymer particles to a structure of absorbent material, without the formation of any additional crosslinkers.

The '377 patent also fails to teach or suggest an emulsion that contains an organic solvent *and* a carboxyl-rich polymer *and* a crosslinker for application to a supporting material and subsequent further crosslinking (i.e., curing) on the supporting material. The '377 patent also fails to teach or suggest contacting the supporting material with an emulsion containing a solvent. In contrast, the '377 patent discloses the *necessity* of removing a solvent from the polymer particles.

Further, the '377 patent fails to provide any apparent reason to modify the teachings therein in a way that arrives at the presently claimed invention. The '377 patent discloses no more than an inverse polymerization process to provide polymer particles, then

mixing or attaching the particles to a structure or absorbent material. The '377 patent provides no teaching or suggestion, and fails to address or consider, crosslinking an emulsified polymer mixture within and between a solid substrate material. The examiner has provided *no* factual reasoning as to why a skilled person would have been prompted to modify the reference in a way that arrives at the claimed invention.

Finally, modifying the '377 patent in a way that leads to the presently claimed invention does not provide a reasonable expectation of success. The claimed process recites applying a polymeric material and a crosslinker to a supporting material from an emulsion containing an organic solvent. The reference discloses the need to *remove* the solvent. Allowing the solvent to remain in the emulsion, and to utilize a non-volatile solvent as in claim 21, destroys the teachings of the '377 patent.

With respect to claim 21, the '377 patent fails to teach a mineral oil. The '377 patent teaches cyclohexane as the organic solvent in the inverse emulsion polymerization. The cyclohexane is removed from the polymeric particles after the polymerization, as explicitly required by the '377 patent. The '377 patent teaches no other specific organic solvent and merely instructs persons skilled in the art to use organic solvents that are volatile and removable from the polymer particle. Mineral oil is non-volatile. Therefore, a person skilled in the art would not have been motivated to substitute mineral oil for cyclohexane because the mineral oil could not be removed from the polymeric particles. Using mineral oil would destroy the teachings of the '377 patent, which requires removal of the organic solvent from the polymer particle.

Furthermore, the examiner has not supported the rejection of claims 11 and 21 with the *factual* reasoning, but merely conjecture. The rationale used to support the rejection appears to be a hindsight reconstruction as opposed to teachings and suggestions taken from the cited '377 patent reference.

With respect to claims 13, 15, 16, 19, and 20, these are preferred embodiments of the present invention. Applicants do not rely solely on the features recited in these claims for patentability, but rather rely upon the recited features of these claims *and* the claims from which they depend for patentability. As stated above, applicants submit that these claims are



patentable over the '377 patent for the same reasons that independent claim 1 is patentable over the '377 patent.

For all the reasons set forth above, it is submitted that all pending claims would not have been obvious over the '377 patent and that the rejection under 35 U.S.C. §103 should be withdrawn.

All pending claims are in a form and scope for allowance. An early and favorable action on the merits is respectfully requested.

Should the examiner wish to discuss the foregoing, or any matter of form in an effort to advance this application toward allowance, the examiner is urged to telephone the undersigned at the indicated number.

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Respectfully submitted,

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